

Constellation Lab ████████████████████

Name _____

Date _____ Per _____

Purpose: To plot the locations of several constellations

Background: Stars are located by using their right ascension and declination. Right ascension is measured in time units (hours, minutes, seconds). On the graph, right ascension is shown by the lines that radiate from the center. The numbers on the lines are hours. Each hour is divided into six segments of 10 minutes. Declination is measured in degrees. On the graph, declination is shown by the concentric circles around the center of the graph. Each circle is labeled with its value.

Materials: Special graph paper, data table showing right ascension and declination of some constellations.

Procedure:

1. Use the special graph paper and the data for right ascension (RA) and declination (DEC) to plot the locations of each of the stars in each of the constellations listed. For each star indicated with an *, plot * on your graph. For all other stars, plot a circled dot. Although names for many of the stars are shown in the data, you do not need to write the name on your graph. However, you may find it helpful to write the number of each star very tiny and very lightly near each point. Note that the Little Dipper and the Pleiades star cluster are already plotted.
2. Using the numbers and the order given below each listing, connect the stars to form the constellation.
3. Write the name of each constellation near it.
4. Answer the questions.

BIG DIPPER (Part of Ursa Major)				
No	RA		DEC	NAME
1	11 hr	00 m	+62	*Dubhe
2	11	00	+57	*Merak
3	11	50	+54	*Phecda
4	12	10	+57	Megrez
5	12	50	+56	*Alioth
6	13	20	+55	*Mizar
7	13	45	+50	*Alkaid
Connect 1-2-3-4-5-6-7				

Taurus				
No	RA		DEC	NAME
1	05 hr	35 m	+21	
2	04	35	+16	*Aldebaron
3	04	15	+16	
4	04	25	+19	
5	04	40	+23	
6	05	25	+29	*Elnath
Connect 1-2-3-4-5-6				

CASSIOPEIA				
No	RA		DEC	NAME
1	01 hr	50 m	+63	
2	01	25	+60	Ruchbah
3	00	55	+60	*Navi
4	00	40	+56	*Schedar
5	00	05	+59	*Caph
Connect 1-2-3-4-5				

Gemini				
No	RA		DEC	NAME
1	06 hr	35 m	+16	* Alhena
2	07	15	+22	
3	07	40	+28	*Pollux
4	07	30	+32	*Castor
5	06	40	+25	
6	06	20	+23	
Connect 1-2-3-4-5-6				

Orion				
No	RA		DEC	NAME
1	05 hr	50 m	+7	*Betelgeuse
2	05	45	-10	*Saiph
3	05	20	-8	*Rigel
4	05	20	+6	*Bellatrix
5	05	40	-2	*Alnitak
6	05	35	-1	*Alnilam
7	05	30	0	*Mintaka
Connect 1-5-2-3-7-4-1				

Lyra				
No	RA		DEC	NAME
1	18 hr	45 m	+40	
2	18	35	+39	*Vega
3	18	40	+38	
4	18	50	+37	
5	18	55	+32	
6	18	45	+33	
Connect 1-2-3-4-5-6-3				

Canis Major				
No	RA		DEC	NAME
1	06 hr	45 m	-17	*Sirius
2	07	00	-16	
3	06	20	-18	*Mirzam
4	07	05	-26	*Wezen
5	07	20	-29	*Aludra
6	06	55	-29	*Adhara
Connect 1-2, 1-3, 1-4, 4-5, 4-6				

Cygnus				
No	RA		DEC	NAME
1	20 hr	40 m	+45	*Deneb
2	20	20	+40	*Sadr
3	19	45	+45	
4	20	45	+34	*
5	19	55	+35	
6	19	30	+28	*Alberio
Connect 1-2-3, 2-4, 2-5-6				

Hercules				
No	RA		DEC	NAME
1	17 hr	50 m	+45	
2	17	55	+37	
3	17	15	+37	
4	17	00	+31	
5	17	15	+25	
6	17	30	+26	
7	17	45	+28	
8	17	55	+29	
9	18	05	+29	
10	17	10	+14	Roselgethi
11	16	30	+22	
12	16	20	+19	
13	16	40	+32	
14	16	40	+39	
15	16	30	+43	
16	16	20	+46	
17	16	05	+45	
18	15	50	+43	
Connect 1-3, 2-3, 3-4-5-6-7-8-9, 5-10, 4-13-11-12, 13-14-15-16-17-18, 3-14				

Pegasus (Great Square Only)				
No	RA		DEC	NAME
1	23 hr	00 m	+28	Scheat
2	23	00	+15	Markab
3	00	10	+15	Algenib
4	00	05	+29	*Alpheratz
Connect 1-2-3-4-1				

Andromeda				
No	RA		DEC	NAME
1	00 hr	05 m	+29	*Alpheratz
2	00	35	+33	
3	00	55	+38	
4	01	05	+47	
5	00	35	+31	
6	01	05	+35	*Mirach
7	02	00	+42	*Almach
Connect 1-2-3-4, 1-5-6-7				

Conclusions:

1. In the Big Dipper, Dubhe (#1) and Merak (#2) are known as the *Pointer Stars*. Use Dubhe and Merak to draw a straight line to the Little Dipper. What is the name of the star to which they point?_____

2. Where is this star located relative to Earth?_____

3. In the Big Dipper, Merak (#2) and Megrez (#4) can be used to locate another star in another constellation. Use these stars to draw a straight line. To what star do they point? What constellation is this located in?_____

4. In Orion, Mintaka, Alnilam, and Alnatak form Orion's belt. Use these three stars in order (7-6-5) to draw a straight line away from Orion. To what star do they point? How is this star famous and what constellation is it found in?_____

5. Along with the Big Dipper and Cassiopeia, the Little Dipper is a circumpolar constellation. What is a circumpolar constellation and how are they different from the other constellations on you list?_____

6. Identify the season when each of the following constellations will best be seen in the sky.

Andromeda	_____	Lyra	_____
Cygnus	_____	Orion	_____
Hercules	_____	Pegasus	_____

7. M31 is a naked-eye galaxy in Andromeda. It is located at right ascension 00 hr 40 min, declination +41. Place the pound sign (#) on your graph to show this galaxy.

8. M42 is the famous Orion nebula. This diffuse nebula is located at RA 05 hr 35 min, DEC -5. Place the pound sign (#) on your graph to show this nebula.

9. Alcor is the dimmer star of a famous naked-eye double star pair in the Big Dipper. It is located at RA 13 hr 23 min, DEC +55.2. With which star is Alcor associated?_____

